Micro-history of a Micro-estuary? Aspects of the Enviro-history of the Klein Palmiet Estuary in the Eastern Cape (South Africa)

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2017

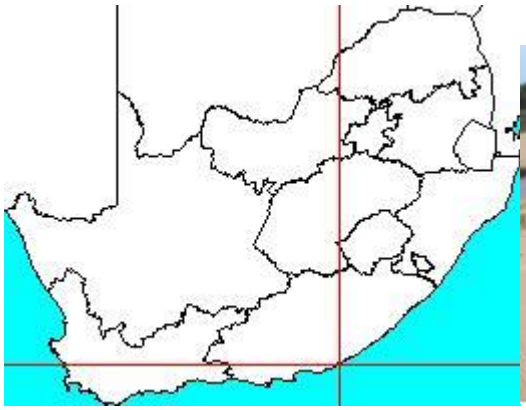

Figure 1. Location map of Klein Palmiet Estuary.

Figure 2. Aerial view of Klein Palmiet Estuary.

Figure 3. Pre-mouth opening on 1 Jan 2015.

Figure 4. Actual mouth opening on 1 Jan 2015.

'We still have a lot to learn how to live on Earth'

Abstract

This study combines the approaches of enviro-history with results of estuarine research in South Africa, to shed light on the question if studying a micro-estuary, constitutes an example of a micro-historical investigation. Despite the prefix 'micro', small estuaries and small-scale enviro-historical investigations both benefit from interdisciplinary collaboration whilst recognising the need of their links to wider local, regional, transnational and even global spaces. The debate about the relative 'size' of the study object, is a technical one that remains important. Greater interdisciplinary research can contribute to address skills shortages in estuarine research and can thus fill research gaps in estuarine, micro- and also enviro-historical fields alike.

Key words: enviro-history, micro-estuary, micro-history, neo-conservation, Klein Palmiet Estuary.

1. Introduction

Since antiquity, historians have studied the deeds of great kings and queens, religious leaders or emperors – that is, the 'big' or 'important people' in society; or large economic and financial systems; big political events and social movements – whatever the criteria for their perceived 'greatness' or 'importance' or 'bigness' might have been.

Professor Lizette Rabe wrote in this regard: 'History has traditionally occupied itself with recording the events that change the course of nations and regions' (Rabe 2010: 1). But Graeme Bloch goes further when he wrote: 'That history is not a neutral discipline, is confirmed in periods of great historical stress and change [...] History is called upon to directly service the ongoing drive, and increasingly conscious interventions, of the masses in the creation of a new nation' (Bloch 1987: 1). The position in social sciences is very similar. They 'have tended to re-examine their philosophical foundation […] during periods of crises: periods when familiar and trusted methods no longer seem to justify the faith originally invested in them, when researchers lose confidence in the significance of their finding, and when obvious and taken-for-granted principles no longer see quite so clear cut' (Hughes 1987: 1; Revel 1994). In summary: 'The philosophies, concepts, and stories we use to make sense of an increasing explosive and uncertain global present are – nearly always – ideas inherited from a different time and place' (Moore in Moore 2016: 1) – implying that they are all historical in nature. These authors go to the heart of some of the requirements for a multidisciplinary enviro-historical study to outline the micro-history of a micro-estuary.

In estuarine research, 'size also matters' because historically the tendency has been to study the larger estuaries at the expense of the smaller ones. Considering that the world's surface is made up of 70% water, 93% of which is salt water and only 2,6% fresh water (Chege 2009: 1), then it is clear that all scarce water sources necessitate more research and sustainable best use practices. About 663

million people of the world's growing population of seven billion do not have access to clean fresh water (World Health Organisation 2015: 7) and 19% of the rural people in South Africa do not have constant water supply; 33% have no basic sanitation services; 26% of all schools and 45% of medical clinics do not have access to water (Koncagül *et al*. 2006). The estimation is that by 2025 the South African population will be 75 million people and that the freshwater demand before then would have exceeded the natural supply. In South Africa 50% of estuaries as important sources of fresh water regimes have been lost or destroyed. What are left of South African estuaries, are also affected by increasing water demand (Chege 2009: 1).

Comments in South Africa about the potential consequences of a lack of water security through inadequate service delivery date back some time and share a common theme. Phema Ramoeli (Sector Co-ordinator, SADC Water Sector Co-ordinating Unit, Lesotho) warned that without 'equitable and sustainable utilisation of water for social, environmental justice, and economic benefits for present and future generations', governments will have to face conflict (Ramoeli in Turton and Henwood 2002: 5); Mikhail Gorbachev (President, Green Cross International, Geneva) maintained that without 'access to basic water supplies, disease and ill-health, poverty environmental degradation and even conflict may be the result' (Gorbachev in Turton and Henwood 2002: 70) and lastly, Ronnie Kasrils (Minister of Water Affairs and Forestry, Republic of South Africa) concurs. He wrote: 'There is a popularly held belief in parts of the developed world that water scarcity will inevitably lead to conflict' (Kasrils in Turton and Henwood 2002: 10). A recent comment is: 'There is a growing tide of popular protest around service delivery issues, many at local level. Rural communities and marginalised urban communities are claiming the benefits of democracy, using protest as a means to secure the resources to meet their demands. These protests reflect the tensions implicit in managing the shift from a politics of struggle to one of delivery…' (Munslow and Mc Lennan in Mc Lennan and Munslow 2009: 4); 'Voters are now using the brick to supplement the ballot' (Munslow and Mc Lennan in Mc Lennan and Munslow 2009: 13), and lastly: 'Whether it is transport or water, the longer-term political success of South Africa's government will depend on its ability to make available the services that its citizenry needs most' (Muller in Mc Lennan and Munslow 2009: 225).

It is only recently (from the late 1970s) that social historical research in South Africa started to focus on the lives of the 'little people' meaning the everyday or ordinary people in society – e.g. the street vendor, domestic, farm, sex or mine worker, peasant farmer or flower seller. In this regard the History Workshop (est. 1977) at the University of the Witwatersrand played a major role in the popularisation of South African history (Bonner 1994: 1). It provided a much-needed 'local focus and impetus for the writing of history from below' (Bonner 1994: 2). There are many examples that testify that the History Workshop's research fits descriptions of micro-history.

This article will attempt to bring enviro-history to bear on the topic of micro-history in relation to a micro-estuary. With regards to enviro-history, professor Jane Carruthers argued that: '[e]nvironmental history grew out of the Marxist social history tradition and was launched in the context of the end of

the apartheid state and a changing political dispensation from the late 1980s onwards' (Carruthers in Dovers *et al.* 2002: 4). With the Fall of Communism in 1989 'the spectre that was haunting Europe', had to take a new turn, yet again, in its attempt to survive against competing ideologies. Today, there is a new spectre that haunts the world – the spectre of environmentalism and neo-conservation (Engelbrecht 2017a: 1–4). As a result, there is currently enough enviro-historical research being done to describe many of them as examples of micro-history.

Over the last four decades the rise of academic study of the 'small', in everyday life, gave rise to micro-history now being a small but productive field of historical study – known as *altagsgeschichte* in Germany, *microstoria* in Italy, *petite histoire* in France (Brewer 2010), and every-day history or history-from-below, in many English-speaking countries – including South Africa. Similarly, today we also hear calls from scientists advocating the study of the smallest of the small estuaries – making interest in micro-estuaries a more often discussed topic than it used to be, for scientific investigation. Whereas Harrison *et al.* (2000) for example, excluded very small estuaries form their research about geomorphology, ichthyofaunal and water quality in some of South African estuaries at the time, Whitfield and Baliwe (2013a: 2) proposed in their literature study about research outputs about South African estuaries, at they should be included for study.

If 'water is life' and 'every drop counts', then water security and all water regimes have become important themes for study in enviro-historical research. Therefore, the Klein Palmiet Estuary is the subject of an interesting enviro-history study. In order to answer the question if studying a micro-estuary constitutes a study in micro-history, a few cryptic observations about what micro-history and a micro-estuary is, are made.

2. Conceptual formulations of micro-history

The purpose of this section is to identify theoretical and methodological constituent imperatives of micro-history by looking at the contributions of a few selected proponents of micro-history.

Micro-history developed during the early last quarter of the 20th century in the USA and Europe, specifically in Italy, in reaction to traditional top-down-history typical of mainstream political and social histories. More specifically, when a group of Italian scholars found a collection of Catholic Church documents that enabled them to ask new questions about long-standing religious ideas and practices (Rion 2011: 1), things changed for micro-history.

For Thomas Cohen, micro-history does not constitute a school of unified thought nor a theoretical discipline. He suggests that it is rather 'an expository practice, with a shared esthetic and a common interest in fine-grained detail and dense connections' (Cohen 2017). Similarly, Trivellato (2011: 3; Ginzburg 1993), who referenced Levi, Ginzburg and Grendi maintained: 'Italian microhistorians never amounted to a unified school of thought'. This however, does not have to be a limiting factor on the achievements of micro-historians. It resembles critiques of early Critical Theory of the Frankfurt

School (Held 1980: 13; Hamilton in Bottomore 1984: 9; Jay in Rasmussen 1996: 39; Biro 2011: 'Introduction'). Yet today, Critical Theory has a large influence on social sciences and philosophy.

An overview of the themes in recent literature, makes it clear that over the past 50 years micro-history has developed to have overcome narrow geographical, religious and linguistic themes of investigation (Trivellato 2011: 1–24) that it at first focussed on. Initially micro-history generally focused on the everyday lives of ordinary people. But over time, micro-history developed to also give prominence to landscape, time and social trends, whilst capturing commonalities (Mari 2013). In a sense, micro-history's unity is found in time, place and human actions: time, because it covered short periods; place, because it is of limited geographical scope, and human actions, of restricted scale.

Since the historiography of micro-history generally credits Carlo Ginsburg's *Il formaggion e i vermi: Il cosmo di un mugnaio del'500* (first published in 1976), then translated and published in 1980 as *The Cheese and the Worms. The Cosmos of a Sixteenth-century Miller,* as the founding work of micro-history, a few observations about what micro-history in its early years entailed, can be useful.

Firstly, Ginzburg's study (2013: ix–xii) of Domenico Scandella (1532–1599, nick name Menocchio) an ordinary man in society dealt with the two trials of him being accused of propagating heretical beliefs. Secondly this study was based on many newly found and unforgotten church documents that became important in historical research. Thirdly, Ginzburg's analytical method drew attention to the problems in reconstructing the culture and social context of Scandella's life and times. The manner in which Scandella read and understood the written documents of his day, inadvertently created a filter through which his historical understanding and methodology was practiced. In the fifth instance, Ginzburg took into account factors such as ideological distortion, lack of objectivity of sources, and long gone oral tradition that made his research difficult because it left caps. He also asked 'what relevance the ideas and beliefs of a single individual of his social level can have' (Ginzburg 2013: xxvii) on the qualitative and quantitative limits of 'two great historical events: the invention of printing, and the Reformation' (Ginzburg 2013 xxxi). Ginsburg concluded: 'it is impossible to make clear-cut distinctions' (Ginzburg 2013: xxxi). According to Ginzburg, it was an American, G.R. Stewart, who was 'the first person to dredge up the word *microhistory*' (Ginsburg 1993: 10) in 1959.

In fairness therefore, a closer look at George R. Stewart's *Pickett's Charge. A Microhistory of the Final Attack at Gettysburg, July 3, 1863,* first published in 1959, would assist to reflect on the first modern micro-history written – at least in Ginzburg's view.

Stewart argued in *Pickett's Charge* that this final armed attack at Gettysburg between Union and Confederate forces became known as a 'great dramatic episode of the history of the United States' (Stewart 1987: ix). Stewart's view about this 15-hour fight highlights a few important points. Firstly, by analysing the circumstances, it is highly speculative of the outcomes of the battle. The war in its totality could have been different regarding this conflict, and whether the United States would have become a global power (Stewart 1987: ix) as a result of what happened on that day. Secondly, this

suggests that this final attack was considered to be 'the climax of the climax' (Stewart 1987: ix) and hence 'the central moment of our history' (Stewart 1987: ix). Thirdly, Stewart implies that it is not clear if this event 'would of itself have reversed the course of the war and decisively altered history' (Stewart: 1987: ix). In other words, what is the scope of the potential results of a so-called single event on the course of history? But single events are not singular in composition, nor are simple facts as uncomplicated as they tend to appear (Engelbrecht 2012; Engelbrecht 2013). This, in the fourth place, poses further complications for the historian. At the time, the significance of this event was not immediately realized. Only in time did it become significant and symbolic as 'a part of world-history' (Stewart 1987: ix). The implication is that even the smallest of events or a dramatic episode of history (Stewart 1987: ix) becomes part of the global past and present. This also applies to the shortcomings of 'the ordinary language of the time' (Stewart 1987: ix) because the historian needs to make a decision about terminology and interpretation. For instance, 'no matter what restrictions the dictionaries and manuals may put upon that word' (Stewart 1987: ix) the person needs to decide whether it was an attack, a march, a charge, an assault, or advance. Professor E.H. Carr explained this dilemma as follows: 'No document can tell us more than what the author of the document thought – what he thought had happened, what he thought ought to happen or would happen, or perhaps only what he wanted others to think he thought, or even what he himself thought he thought' (Carr 1974: 16).

From the above two early 'classic micro-histories', one provisional observation can already be made: micro-history did not start in the late 1950s or in the 1970s – it already existed for centuries without the authors at the time probably knowing that they were practising it. They did not know or use the term micro-history (as we do today) as a historical genre, but they nevertheless intentionally wrote history about the 'small'. When the term 'micro-history' was first introduced by Stewart in 1959, we might say *that* constituted the start date of a new awareness or kind of history *micro-history, as the writing about aspects of the everyday, the subaltern.*

In1991, Giovanni Levi's 'On Microhistory' was published in Peter Burke's *New Perspectives on Historical Writing.* This is an important source for the attempt here to unravel what the characteristics of micro-history are, because it tells us about the *practice* of micro-history that is historiographical in nature; varied and eclectic as a *theory* of micro-history, and lastly, that its *method* focusses on detail and procedure (Levi in Burke 1991: 93). At the end of his chapter contribution, Levi wrote:

> 'These, then, are the common questions and positions which characterize microhistory: the reduction of scale, the debate about rationality, the small clue as scientific paradigm, the role of the particular (not however, in opposition to the social), the attention to reception and narrative, a specific definition of context and the rejection of relativism' (Levi in Burke 1991: 110).

It is not necessary to discuss Levi's 'certain distinctive characteristic in micro-history' (Levi in Burke 1991: 93), but simply list them for our purposes herein: micro-history developed from the 'general political and cultural debate' (Levi in Burke 1991: 93) of the time; because of the fast changing socio-political events, some hopes and mythologies became inadequate for micro-historical analysis; micro-history had to pose new questions also about its own methodologies and interpretations; micro-history has proven some future perspectives of positivism wrong; in its reactions to crises, micro-history had to redefine 'concepts and profoundly analysing existing tools and methods' – some were inclined to lean towards 'a desperate relativism, neo-liberalism or even the return to a philosophy riddled with irrationality'; yet, micro-historians were committed to a 'more realistic description of human behaviour, employing an action and conflict model of man's behaviour' as a model for interpretation; lastly, micro-history 'had a very specific location within the so-called new history' (Levi in Burke 1991: 93–95).

According to Magnussen (2006), micro-history conducts investigations of the small scale which focuses on society's small units – for instance, a single event, single individual, village or object. Generally speaking, micro-history is the antithesis of generalizations of large-scale investigations. The argument amongst proponents of micro-history is that the results of large-scale investigations do not stand up against the generalizations or the specifics of smaller units. Seen from this perspective, Magnussen's view is that macro-analysis distorts conclusions at the individual level. Magnussen believes that micro-history delivers a more representative, truer and more objective set of results because it scrutinizes the disconformities, contradictions and differences of what is being studied. In so-doing, micro-history has become a specific analytical tool for historical interpretation where a degree of generalization cannot be predetermined.

Forty years into micro-history, Francesca Trivellato (2011: 1) asked an important question: 'Is There a Future for Italian Microhistory in the Age of Global History?' This question is significant because it seems that with the rise of globalism (Engelbrecht 2014) many other approaches were engulfed by this popular 'global turn'. Trivellato (2011: 2) wanted to answer two questions, both of relevance for micro-estuaries, firstly, 'How has the meaning of microhistory changed over the past thirty years?', and secondly, 'what can this approach contribute nowadays?'

Trivellato concurred with other historians before him that micro-historians did not constitute a unified school of thinking. Nevertheless, initially, they were is small closely-knit group that practiced a shared 'style' that was characterized by a 'strong theoretical awareness'; they rejected 'idealism in philosophy', 'ideological dualism in politics, as well as rhetorical pomposity and the grand synthesis in historical writing' (Trivellato 2011: 3). Furthermore, they shared the conviction with French and German scholars 'that to reveal phenomena obscured by received wisdom would invalidate the teleology of grand narratives. But they strove less to recover the everyday life of ordinary people than to employ the micro-scale of analysis in order to test the validity of macro-scale explanatory paradigms' (Trivellato 2011: 3). In addition, micro-historians also benefitted from 'crude Marxism of

left-leaning social historians, the Braudelian *longue durée*, and the approach to quantitative history that the Annales school derived from it, and lastly, the influence that socio-cultural functionalism anthropology and modernization theory in politics and economics exerted on historiography' (Trivellato 2011: 3).

A few last comments about Trivellato will suffice. Italian micro-historians were predominantly influenced by anthropology and 'drawn to idiosyncratic figure and phenomena rather than to ordinary people and consistent patters' (Trivellato 2011: 3). They work 'extra-ordinary documents' that at face value appears to be 'incongruent with standard narratives' that 'repudiated the rigid separation between elite and popular culture'. When stated more clearly, 'microhistory relies on an intensive use of primary sources' (Trivellato 2011: 5). Secondly, for them, their 'micro-scale of analysis' are firmly based on 'the apparently minutest action' (Trivellato 2011: 4). Thirdly, micro-history approach is synchronic, 'interested in (and more suited to) uncovering the interconnection between multiple phenomena than identifying causal processed of change over time' and in so-doing steer away from wider generalizations (Trivellato 2011: 5). In the fourth instance, micro-history for Trivellato (2011: 7–8), outside Italy, are characterised by its commitment to narrative style. By placing the unfamiliar under intense scrutiny, is attempts to arrive at new interpretations and new research outcomes. Lastly, Trivellato (2011: 9ff) gave an outline about micro-history fitting into or relating to global micro-history. Such methodology can assist to make cross-cultural connections, overcome the limitations of functionalism, and critique by the elite and popular culture. It 'humanize the tragic story' but is 'ill-suited to the study of change over time'.

Despite some differences in method and use of sources (Port 2015:108) micro-history is the historical investigation into a clearly demarcated unit for study. For some observers it can be an individual human being, a family, a community, an event or single feature. It allows for a close-up look at the detail of the study object (Healey 2015; Port 2015: 109). But, as in the case of the Klein Palmiet Estuary, single features are clearly not as uncomplicated as first impressions might appear.

Richard Blundell (2015) adds another dynamic – the question of the local, into the body of characteristics of micro-history, when he wrote: 'microhistory's aim is to create a clearer picture of the broader enquiries by intensive investigations into representative localities'. Naturally, the etymology employed can be deceptive since micro-history can be more than simply 'small' things (Waddell 2012). It tends to ask 'big questions' about small study objects (Healey 2015). For Waddell, the advantages of micro-history are not so much 'inherent within the method but rather are contingent upon the question that is being answered'. To that end, he proposed three advantages of micro-history: To identify broad patterns, ideologies, mechanisms that influence human behaviour; to question traditional theory and its orthodoxies, and because it operates on a smaller scale, it is less selective in its choice of sources (Waddell 2012). But the choice of sources is a function about their relevance.

Similar claims were previously made by De Vivo (2010: 387) that '[a]t the heart of the microhistorical method is the commitment to the close study of individuals, localities and events in

their precise historical context, as an antidote the teleology and elitism of traditional political history, on the one hand, and as an alternative to the reductive determinism of social history as it was practised in the 1950s and 1960s on the other.' But the prefix 'micro' is misleading because by suggesting that scale is the determining factor of the scope (or size) of the study object, rules large questions about small things out – at least out of its global context or 'link of larger networks' or connections with the macro.

It can be argued that there is sense in contextualizing the 'apparent strangeness' of the seemingly insignificant. But it is unnecessary to regard micro-history as some form of history that has grown out of social history, seemingly without its own sense of *longue durée* (Szijártó 2002: 209; Medick 2016: 242; Appuhn 2001) devoid of socio-political influences. Instead, micro-history's methodology assists to close the gap between theory and practice since it smallness in scope helps to understand trans-national or trans-continental scales regardless of its origin. In doing so, micro-historians strive towards finding unity in variety with a materialist determinism and sense of positivism (empiricism) of its own. The implication is that their endeavours do not separate them from the interconnectedness of the global (Medick 2016: 246; Appuhn 2001) nor need be Euro-centric in nature. It does not have to portray 'The Big Man/Woman'-history any more. Therefore, micro-history displays a connectedness with the world of at least three levels: the individual, the local-regional with trans-national and trans-continental, and lastly, the global (Trivellato 2011). Szijártó (2002: 209) proposed four justifications for micro-history. According to him it is *appealing* to the general public; micro-history is *realistic*; it conveys *personal* experience and lastly, it *branches out* very far. Firstly, it had a popular, non-academic/scientific readership. Secondly, because of the closeness to and focus on humans, it is real and stems from and relates to the personal. Lastly, with the advent of digital science and instant global-wide communication of vast volumes of information, new research opportunities are opening up almost instantaneously certainly at a rate faster than researchers can cope with and in many instances, much faster than society can adjust to in an enlightened manner.

For professor Lizette Rabe, '[a] simplistic description of microhistory is that it is, of course, a branch of history' (Rabe 2010: 86) – '*the study of the past on a very small scale*' (Rabe 2010: 86) of a small town or village, which are examples many other researchers listed before. Furthermore, as shown above, in both instances of Ginsburg and Stewart, their study subjects were individuals of seemingly '*minor importance*' (Rabe 2010: 86), yet they were successfully studied in their larger contexts. The case of the Adderley Street flower sellers that Rabe studied (Rabe 2010: 86–104) is another example. In other words, even the unpopular, unnoticed 'Other', marginalized, forgotten or destitute in society, are no less worth of study, be it from a sociologically psychological, historical, political or any perspective. In a sense, the reverse is true: it is precisely *because the marginalized tends to be forgotten* that they need attention – hence micro-history's contribution to focus on the out-of-the-mainstream people and their history in everyday life (Rabe 2010: 87–88). It is almost as if micro-history is well-placed to 'cater' for them.

According to Wim Hupperetz (2016: 279) micro-history places emphasis on what has been found and not on what is missing. It therefore enables comparisons and direct investigation or observations of things (tangible or not) worthy of comparison over long distances and time periods. Like most micro-historians before him, he subscribed that micro-history allows the big questions about big events in humanity – social change in and over a particular period. The problems that historians face of havening too many too few or inadequate facts and sources, and thus having to partially rely on theory, are all wrapped up in Professor Johann M. Wassermann's (2016: 90–124) research about how the South African War (1899–1902) impacted on the identity politics of inhabitants of the greater Drakensberg region. Wasserman's study achieved just that: asking '"large questions" in a "small place"' (Wassermann 2016: 97). Either way, micro-historians also, need to make a selection of and from available sources, facts and theories. There is no escape from the age-old problems of historical selection, interpreting and the use of deductive logic and theory to fill 'gaps' in order to present the research results in the best possible and credible manner. Criticisms regarding generalizations that are derived from micro-history do not have to be questionable. For example, local level contexts as well as those of larger scope do not have to limit or rule out the use of the comparative historical method, or shy away from generalizations or the application of quantitative analytic investigations of the smaller kind. Instead, they seem rather productive when studying a micro-estuary, such as the Klein Palmiet Estuary.

3. Conceptual formulations of a micro-estuary

The Klein Palmiet Estuary (33° 30' 29" S and 27° 07' 32" E) is an example of a micro-inlet (Whitfield and Baliwe 2013a: 55), shaped by significant littoral tidal activity. Estuaries have a natural beauty of their own (Gaullart and Alemany 2007).

Various researchers (Harrison *et al.* 2000; Vorwerk *et al.* 2001, and Whitfield and Baliwe 2013a) have considered this estuary (and many others) as under-researched. Far from being relatively featureless, the Klein Palmiet estuary it has a unique, ever-changing structure and niche complex worth investigating in search for, and description of, patters and features (or lack thereof) that would typically characterize micro-estuaries. Some features that substantiate the Klein Palmiet Estuary's smallness can be summarized (Vorwerk *et al.* 2001: 7; Vorwerk *et al.* 2003: 241) as follows:

Feature	Calculations
Length	400 m
Mean width	16 m
Mean cross-sectional area	7 m^2
Catchment area	12,6 km^2
Surface area	0,4–1,44 ha
Average depth	0,4–1,2 m
MAR	0,67 x 10^6 m^3/yr

Figure 5. Some features of the Klein Palmiet Estuary.

In a report about the geomorphology, ichthyofaunal composition, water quality and aesthetics of South African estuaries, Harrison *et al.* (2000: 24–25) wrote about classifying South African estuaries as follows:

> 'A conceptual classification of the geomorphic variability among South Africa's estuaries has been produced. Several systems particularly on the west coast were not considered estuaries either due to their small size, their ephemeral nature, or because they were essentially isolated. Six basic estuary types were identified. These were divided into normally open and normally closed systems. Two types of normally closed estuaries were recognised. These were systems where the water level was typically perched above sea level and those where the water level was approximately at sea level. In this report, however, the normally closed estuaries were sub-divided into small, medium, and large systems based on surface area. The normally open systems were divided into barred and non-barred estuaries. Two types of permanently open barred estuaries were recognised: river-dominated and tide-dominated systems. In this report the two types of normally open barred estuaries were not identified but were sub-divided into small and medium to large systems based on their mean annual runoff.'

For our purposes herein this useful classification by Harrison *et al.* (2000: 24–25) is adapted in the following manner:

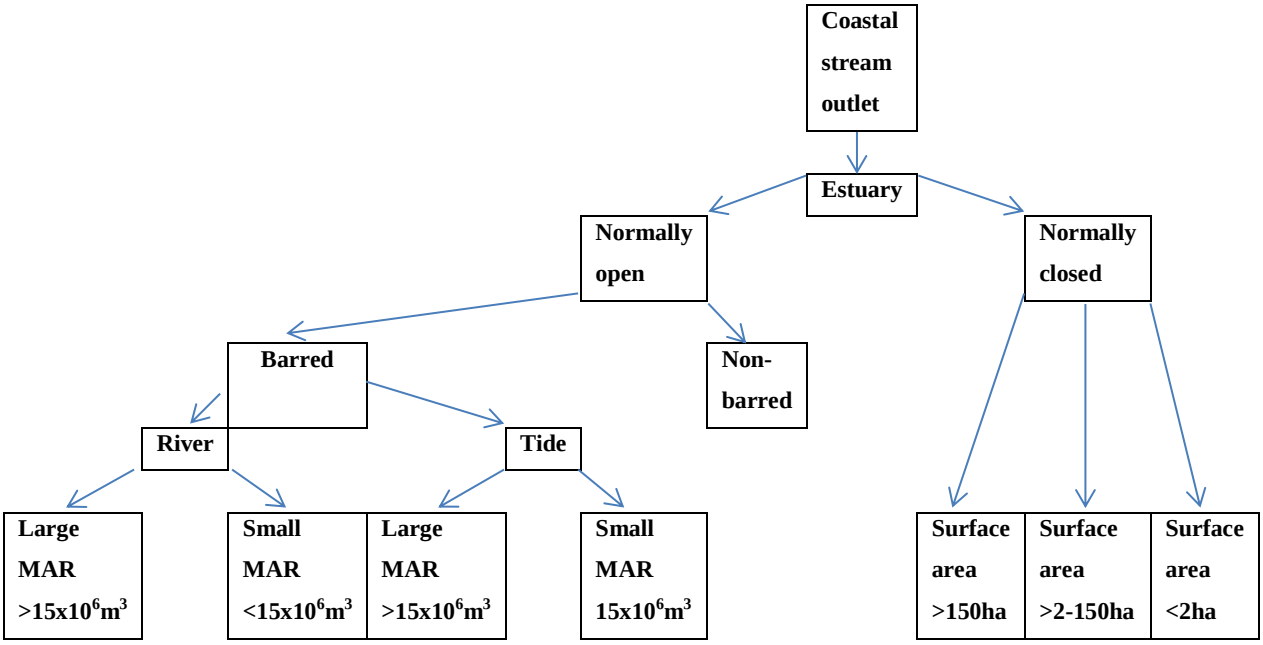

Figure 6. Classification of estuaries (adapted from Harrison *et al*. 2000).

The Klein Palmiet Estuary is one of the estuaries that was not included and therefore not sampled in their research on the basis of its 'very small size' (Harrison *et al.* 2000: 25) of < 2 ha. A few years later, in the methodology of their study about the impact of a selection of environmental variables on fish in the Eastern Cape estuaries, Vorwerk *et al.* (2003: 237) made a distinction between three main types of estuaries based largely on estuary mouth status and estuary size. These types of estuaries are: permanently open; intermittently open, and normally closed estuaries. Vorwerk and co-researchers continued: 'We classified the estuaries into permanently open, small closed (<5 ha surface area) and large closed (>15 ha surface area) systems' (Vorwerk *et al.* 2003: 238) and they regarded the Klein Palmiet Estuary as a small temporarily closed estuary (Vorwerk *et al*. 2003: 239).

	Mouth status	
Permanently open	Small closed (<5 ha)	Large closed (>15 ha)

Figure 7. Classification of estuaries according to Vorwerk *et al.* (Adapted from Vorwerk *et al*. 2003: 239).

The Klein Palmiet Estuary is currently of no urbanistic interest and therefore it rules out the possibility of the production or the politics of socializing space. There are at the moment no residential property development requirements in the immediate vicinity of the estuary. Interest in the estuary from an enviro-history perspective however, is different. Such enviro-interest can be pitted against, for instance, Andrew Biro's (2011: 'Introduction') useful enviro-philosophical framework to debate current and future concerns about specific ecologies from a perspective of being *critical* ecologies. Ecologies are probably critical when they border on being in a perilous state, characterised

by near-total destruction, have high levels of pollution and suffer loss of its normal functions. The question is then: Can there be anything else than critical ecologies?

The apparent 'criticalness' of ecologies is cemented in the aftermath of various continuing forms of destructive human domination, that is, people's hegemonic relationship with fellow humans and with the scarcely resourced natural environment (Engelbrecht 2013a: 1–12; Engelbrecht 2017a: 1–4; Engelbrecht 2017b: 1–44). This is a conscious move away from the belief that 'dominant forms of politics and government throughout the world today are based on mass political parties and centralized bureaucracies' (Spretnak and Capra 1986: xix). Ecological realities are too important to 'think of government as the main instrument of social change' (Spretnak and Carpa 1986: xxi) to secure their long-term sustainability. For instance, the rise of citizen science (Wright 2011) and the instant access to the public domain, in order to share research and debate areas of interest, challenges traditional *praxis* towards estuaries. Consequently, it calls for the development of an ecological civilization – one that blurs the traditional boundaries between natural history of estuaries and history as critical social theory with practical intent. The implication is that species are today evaluated not only by how well they perform as human assets (Mabey 2015: 87).

Because of their appropriateness for this study, I state Biro's (2011: 'Introduction') three paradoxes of contemporary environmental crises. Despite the fact that humans have become more powerful as times goes on, they are at the same time, progressively more vulnerable because human 'progress' does not necessarily eradicate, for instance, environmental destruction that render many ecologies critical. Contemporary human existence has never experienced such societal inequality as currently prevails on a global scale. Stated differently, the ever increasing gap between mega-wealth (for a few) and life-threatening poverty (for the vast underdeveloped majority in many countries) cannot be denied and has been well documented. This widespread development of underdevelopment is contra progress and enlightenment. The present-day community of environmentalism seems incapable to achieve extensive impact needed to sustain life in the broadest sense of the word. In other words, and taken together, prevailing human *praxis* seems unable to balance or harmonize life, eradicate disparities, and can also not find a sufficient collective will to produce a sustainable and simultaneously safe habitable world.

The contention is therefore that research-neglected micro-inlets (e.g. Klein Palmiet Estuary), cannot escape this current reality. Fortunately, recently announced research initiatives at Rhodes University, threw a timeous and important lifeline to these unique coastal micro features. Their research plan is essentially to 'classify micro-inlets and micro-estuaries according to physico-chemical and biotic characteristics, and also to answer the question – when does a micro-inlet become a micro-estuary?' (Whitfield 2016). To answer this question, one needs to go further than making a list of what constitute large and micro-estuaries and then a 'tick the list' to classify them into whichever category. It does however, not undervalue classificatory models in estuarine research. Whitfield and Baliwe (2013a: 2) made the same point.

According to Vorwerk *et al.* (2001: 1), it is historically 'the larger permanently open estuaries that received more research attention and that in general temporarily closed estuaries have been poorly researched.' The question then is: How big or small must a natural feature be to be assigned a name, or, for that matter, before it can be worthy of environmental interest or to draw research interest? For Gaullart and Alemany (2007) 'the scale of the gaze is the key to perceiving the logic to be acted on'. Thus, micro-places with a sufficient identity, and not their relative size, make them deserving of a name, and as a critical ecology, deserve research interest. Despite their size, small geological features such as mini-peninsulas and micro-cracks form part of or resemble a geological whole (Mankin 1995). Santana *et al.* (2002) argued that the distribution of, for instance, micro-bays, micro-inlets, ends, capes and promontories, are the result of large geophysical activities. Against this background, the Klein Palmiet Estuary is in the same position and can therefore be regarded as a micro-inlet. To underline this importance, Whitfield and Baliwe (2013a: 2) wrote:

> 'extremely small systems […] have catchments arising within the immediate coastal environment, are seldom linked to the sea, and make a minimal contribution (in some instances a zero contribution) to the overall estuarine biota of southern Africa. However, this does not imply that they are unimportant ecosystems. There are also numerous small coastal stream inlets (micro-estuaries?) linked to the sea, especially along the Eastern Cape coast, which may or may not have estuarine attributes. These inlets […] require further study in order to determine whether they function as estuaries or not'.

This is a significant shift of perspective in estuarine research. Firstly, it exposes previous research that excluded focus on extremely small estuaries and their environmental importance and secondly, Whitfield and Baliwe opened the door for exploring a new concept of micro-inlets as research subjects in their own right – the concept of a micro-estuary. The impact of redefining extremely small estuaries into a new conceptual analytical model, can potentially focus on estuaries as critical ecologies on a scale of understanding of estuarine research (broader than only the academic) along the following lines: 'The additional work and new interpretations concerning South African estuaries during the past decade has necessitated the production of this latest version which we hope will be of use to local and international estuarine scientists, students, environmental practitioners and managers' (Whitfield and Baliwe (2013a: 1). These initiatives by Whitfield and Baliwe represent a paradigm shift for the current and future estuarine research community. This is also true about the 'philosophical terminology and debate' and that the 'the present […] partly be understood by reference to the immediate past' (Braudel 1995: xxxv). The study of a micro-inlet such as the Klein Palmiet Estuary is too important not to include estuarine historiography.

The new impetus for research about micro-estuaries, as suggested above, links well with debates about the writing and thinking about the environmental past. Therefore, micro-history is well-placed to the broader enviro-historical understanding of micro-estuaries because of its choice and use of (re-) sources. As a result there is a commitment to the intensive study of individuals, localities, events or mentalities. The application of the micro-historical study for the understanding of e.g. micro-estuaries surpasses the conception of 'smallness' as both unacceptable and patronizing. Enviro-history benefits from such point of departure and is beneficial for ecological and conservation purposes. From this perspective, micro-history of micro-estuaries builds on the commitment to a neo-realism (De Vivo 2010: 388) – a realism that transcends positivism, but with empirical and philosophical convictions. There is, therefore, an analogy with the historical community's attempts to work out the relation between the regional and the global of historical studies. Global perspectives are not bigger, more complex or important than the micro- or regional. It is a question of the particularities and the detail, the individual human or place or event, the 'observation from a distance and therefore with width of perspective' with habitat theory and generalization (De Vivo 2010: 389) as the strategy that constantly oscillates between divergent scales of observation.

The micro- and macro- are therefore two sides of the same coin in dialogue with the public domain. In this manner alleged anomalies are assigned their historicity and are not confined to the boundaries of *longue durée.* The reality is that political, social, and enviro-histories are integrated in scales of width and depth of our production of space (Lefebvre 2012) and worldmaking (Goodman 1978). It involves composition and decomposition; weighting; ordering; deletion and supplementation, and deformation (Goodman 1978: 7–16). The reed is to deal with the relevant facts (Engelbrecht 2013a: 1–12) and theory (Engelbrecht 2012: 1–12) that integrate the micro and macro – that are imbedded for instance in globalization theory (Engelbrecht 2014: 1–15). Thus, there is no reason why a study of micro-estuaries cannot be undertaken from a global perspective. Methodologically, it calls for an interdisciplinary approach where e.g. biological, environmental and ecological sciences interact with historical sciences on an equal footing. Despite it being useful, the notion of critical ecologies necessitate that it is in fact necessary, both from a view of history as critical social theory as well as from an environmentalist standpoint.

Inlets are by definition the tidal connections between ocean water and nearshore inland waterbodies, such as estuaries or bays. Their size can range from a few meters in width to a few kilometres (Ross 2004). But the word 'micro-inlet' is not unique to estuarine studies. It is also used in diesel engine fuel supply systems, in inlet jets in thermal and hydrodynamic characteristics of micro-heat sinks, supersonic engine inlets, advanced medical micro-surgery, or the mixing of micro-fluidics.

Etymologically, the word 'inlet' comes from *c.* 1250–1300 Middle English *inleten* that literally means to 'let in'. By the 1570s 'inlet' described a narrow opening into the coast. The English prefix *micro* comes from the Latinized form of Greek *mikros* meaning 'small'. In everyday English today, an inlet is a stream or bay leading inland from the ocean e.g. an estuary, in other words, a waterbody that

is partially closed off by land from the sea. Ordinarily it has a wide mouth that gives access to the sea. The dynamics of such is more intricate than meets the eye and reflect the 'multiplicity of worlds' (Goodman 1978: 1) in the immediate vicinity.

In his description of the conditions at the ever-changing Jersey Shore (situated along the geographic coastal region of the state of New Jersey, stretching from New Brunswick in the north along the coast to Cape May Point further south), Sharkey (2013) wrote that '[i]nlets are more appropriately called "outlets" because their main function is to allow riverine fresh water that flows off the land to pass through the barrier island sand dam and discharge into the ocean, which is the ultimate base level. However, once an outlet is open, then it also functions as an inlet because strong astronomical tides create water level differentials resulting in active tidal exchange of ocean water through inlets and into adjacent estuaries. The regularity and strength of tidal currents produced by this tidal pumping maintains an inlet/outlet system of the short-term scale of hours to years.' If this description is accepted, then, depending on its physical features and functionality, there are two meanings: being an outlet to let inland water out to the ocean, and inlet, when the ocean pushes water upstream inland.

Characteristically, micro-inlets have relatively narrow openings. Of course the opening is narrower when the water breaks the berm and as the volume, velocity and depth of the newly scoured channel increases, so does the width. However, in instances when the overtopping from the sea is minimal, or when the estuarine water starts flowing over the berm towards the ocean, the width of the opening often varies as much as a few meters with a depth to a little more than one or two centimetres. These conditions change quickly depending on a number of factors: narrow, shallow and deep opening; wide, shallow and deep opening; width varies; strong tidal current; shifting bottoms; substantial water turbulence; restriction(s) or increase the flow of water between water bodies of the ocean and inland water; factors causing ideal mixing areas.

It is because of these (and other) terminological uncertainties that Whitfield and Baliwe (2013a: 2) identified the need for further research. Whitfield specifically asked the following question: 'when does a micro-inlet become a micro-estuary'? (Whitfield 2016).

4. Potential micro-estuaries make it onto the research agenda: The Ezemvelo KwaZulu-Natal Wildlife and Rhodes University initiatives

The process of identifying micro-estuaries for KwaZulu-Natal was twofold. The first phase was the desktop research conducted in 2012 when Ezemvelo KwaZulu-Natal Wildlife, undertook 'a programme to identify all the estuaries within the KwaZulu-Natal (KZN) province' (Bate *et al.* 2016: 1). This was done by 'aerial surveys […] conducted along the KZN coast from Umtamvuna Estuary in the south to Kosi Bay in the north'. The result of this was the initial set of drainage features that were then 'arbitrarily grouped into four categories, namely micro-estuary, freshwater seep, hard-structure freshwater outflow point and largely built up/modified site'. In this manner, a 'total of 181

drainage features were identified in the desktop assessment that required further investigation'. There was also a list made of 'the official name (if applicable) and all other colloquial and/or historical names (where applicable) for each system along with all estuarine classification (POE, TOCE, etc.) that have been attributed to them by various studies in the past' (Bate 20016: 2). At this stage a sense of place determination for all these sites were developed by using a classification system based on visual assessment of these water bodies and '[o]nce a site had been considered to be a micro-estuary, a value between 0 and 10 was allocated to the system based on the aesthetic significance and potential recreational use i.e. sense of place' (Bate 2016: 2–3).

The second phase was a reconnaissance survey (Bate *et al.* 2016: 2–3). This was conducted during May 2014 and September 2015 when 'all the sites were investigated during five surveys […] using an off-road 4x4 vehicle, or where this was not possible on foot' to which end all the 'individual sites were labelled initially either as a micro-estuary, a freshwater seep, a hard-structure freshwater outflow point, or a largely built-up/modified site' (Bate 2016: 2). The next step was to visually inspect if the waterbodies were estuaries or not. For this purpose a set of four criteria were drawn up: the presence of a coastal body of water; the past or present evidence of mixing of water; evidence of a sand berm, and evidence of a natural stream feeding freshwater into the site. 'Once a site had been considered to be a micro-estuary, a value between 0 and 10 was allocated to the system based on the aesthetic significance an potential recreational value use, i.e. sense of place' (Bate 2016: 3). But the sense of place assessment was replaced with a set of 28 questions that were more comprehensive. The benefit of this change was that it helped in classifying the aesthetic significance of each site. Another advantage was that the information that pertains to every site now became uniform. The aesthetic significance survey housed the following four categories: recreational value; anthropogenic developments/degradation; biodiversity components, and condition (Bate 2016: 3).

The results were published in December 2016 (Bate *et al.* 2016: 1–8). Of importance for this article is the classification of 181 drainage features as follows:

Sites Classified	**100% (181)**
Micro-estuaries	34% (61)
Freshwater seeps	21% (38)
Hard-structure outflow points	35% (63)
Largely built/modified sites	8% (14)
Other	1% (2)

Figure 8: Classification of 181 sites along KZN coast showing new type of estuary (Adapted from Bate *et al*. 2016: 3).

The overall importance remains that this is the first time that a new type of estuary was identified – a micro-estuary – for the KZN coast (Bate 2016: 1).

In 2015 the South African Institute for Aquatic Biodiversity (Rhodes University) undertook field research for a

> 'multidisciplinary study, in collaboration with scientists and postgraduate students at NMMU, [that] seeks to classify micro-inlets and micro-estuaries according to physico-chemical and biotic characteristics, and also to answer the question – when does a micro-inlet become a micro-estuary? By studying the abiotic drivers, together with an understanding of the microphytobenthos, meiobenthos, zoobenthos, phytoplankton, zooplankton and fishes, we aim to determine whether there are significant differences between micro-inlets and micro-estuaries and how these systems differ from other types of estuaries in the Eastern Cape Province.'

This is a significant move towards conceptualizing micro-estuaries in the Eastern Cape Province of South Africa and according to professor Whitfield, the results are expected in 2018 (Whitfield 2017).

Conclusion

Micro-estuaries are critical ecologies because '[n]o civilization has ever succeeded without developing a sustainable water management strategy, and where this has failed, the civilizations that have spawned slowly faded away' (Kasrils in Tutton and Henwood 2002: 9). Therefore, it seems logic that combining enviro-history, micro-history and micro-estuary by looking at their similarities, is a productive interdisciplinary scientific approach that can make meaningful contributions to the deeper understanding of water as a source of pride or shame.

An enviro-historical approach to both micro-estuaries and micro-history share their until-recent-absence from their respective research agendas – historically it was the 'big' that received research attention. Enviro-history and micro-history both developed from the second half of the 20th century, and focus on micro-estuaries became prominent only some two decades ago. Enviro-history in South Africa developed from social history; micro-history from socio-political conditions, and micro-estuaries from socio-economic imperatives of environmentalism, *neo*-conservationism and water security. Enviro-history, micro-estuaries and micro-history, all 'matter from the ground up'.

Like micro-history, focus on micro-estuaries necessitates and allows researchers to look at the 'close connections', the 'small' events and features that tended to be overlooked or that were previously forgotten. Both ask 'big questions' about 'small' study subjects. Both want to establish the unique and the general in the general and unique. Facts, theories and empirical methods matter for both and often important sources are not so obvious but found in 'strange' or unexpected places. Enviro-history and studies of micro-estuaries will both benefit from drawing on principles of Critical Theory, amongst which the eradication of all forms of domination and realization that all ecologies are in essence critical in nature, are two prominent themes. There is an environmental and *neo*-

conservationist pushback against the popular rise of globalisation (Smith 2017) during the last two or three decades. Both micro-history and intensive studies of micro-estuaries seems to have the potential to overcome limitations created by people: artificial geo-political borders, class, race, gender and self-imposed borders of environmental and conservation studies.

The pros and cons of the single and anthropogenic are 'filters' through which sciences are approached. It recognises that no scientific investigation is ever complete or finite (Engelbrecht 2016: 1–17). As a result, micro-history and studies of micro-estuaries take note of their historicity of time, space and place of the 'everyday', or subaltern – that size is merely part of an analytic tool and not the ultimate criterion for classification. It is part of a larger whole. As micro-history developed over time, the study of micro-estuaries is also set to undergo development and change over time. Any form of stagnation that inhibits the re-study of or re-interpretation of past events – human or non-human – is incongruent with generating knowledge and wisdom. For these reasons both micro-history and studies of micro-estuaries are well placed to undertake diachronic and synchronic studies of their respective subject matters. One obvious advantage for history is that it creates the potential to move away from mere chronology. Micro-history is for instance well-placed to research micro-ecologies from an enviro-historical perspective (Engelbrecht 2017b: 1–44).

In concluding a 2013-study Whitfield and Baliwe (2013b: 3) urged that more students need 'to publish their findings in the primary literature and to actively pursue professional careers in estuarine studies'. Whitfield (2016) also advocated the necessity of multidisciplinary approach to estuarine studies. This article hints at the value that enviro-history and students of micro-history can make to contribute to publishable research outcomes to ad to 'mainstream' research efforts. This means that social sciences can greatly help to address some of the concerns raised by Whitfield and Baliwe and many social philosophers before them. Consequently, Thomas S. Kuhn's *Structure of Scientific Revolutions* (1970) is still relevant today: the reshaping of the interconnected world through shifting paradigms. For instance, Penner (2009) is of the view that traditional history has lost its power to pull back a 'cohesive whole': the same can be said for all sciences. As a result we saw the rise of enviro-history, micro-history or the studies of micro-estuaries.

That the current scope of human domination over all forms of life, render all ecologies critical, is a central tenet of Critical Theory that has been mentioned before (Biro 2011). This is because worldmaking relates to knowledge thereof (Goodman 1978: 1). The ability to make sense of *what* we perceive as well as *how* we perceive it, also depends on our expectations and experience of the world (Baker 2011: 232). Different communities, be they academic or not, would be confronted with the same dilemma in the environmental history of e.g. the Klein Palmiet Estuary – not least based on their political affiliations. In this sense, micro-history has practical intent. At the centre of such differences is the authoritative allocation of scarce resources. For these and other reasons, the 21st century is already experiencing rapid rise in citizen science that is expected to develop exponentially. For instance environmental, economic and political instability, environmental change and the explosion of

knowledge in the public domain, with exert pressure on traditional environmental theory to acknowledge the structural nature of these profound changes.

If we want to understand the realities of a truly global enviro-historical community, we need to move beyond the critiques of citizenship, historical and current inequalities and academic elitism. Such are, after all, structurally exclusivist. The need arises to move away from micro-polis to the supra mega-cosmopolis without neglecting the 'small'. Institutional inferiority can be redefined and no longer be without full status – meaning trying to uphold a status without the 'Other'. In a sense, citizen science will break down 'the walled polis' to 'create a structural' inclusion (Nail 2015: 188). The citizen scientist will, instead of being 'simply [be] 'out there' (Nail 2015: 188) be 'in here'. It is today widely accepted that future societal changes will be brought about in the public domain through the social media and as 'humans struggle through their natural antagonisms with one another' (Nail 2015: 190), transnational rights to rights (Nail 2015: 192) of a community in solidarity.

Before the mid-1980s French historian, Fernand Braudel wrote: 'consider our physical environment. It certainly changes: mountains, rivers, glaciers and coastlines gradually shift. But so slow is this process that it is not noticed with the naked eye, unless by comparison with the distant past, or with the help of scientific studies and measurements that go beyond subjective observation' (Braudel 1995: xxxvi).

It is with these realities in mind that the multidisciplinary work of enviro-historians, students of estuarine studies, and micro-historians, have to work together in a world where capitalism is the world-ecology of capital (Parenti in Moore 2016: 167) with its uneven allocation of scarce resources to the extent that it currently seems impossible to settle our ecological debts (Moore in Moore 2016: 11). The focus of researchers has moved away from their fixation on the study subject, to a greater appreciation of the environment in which they work – where large and small, are the flipsides in the make-up of the only biosphere it seems we will ever have.

Acknowledgements:

I wish to extend my gratitude to the following people: Prof. G.C. Bate (Emeritus Professor and Research Associate, Department of Botany, South Campus, Nelson Mandela Metropolitan University, South Africa) and Prof. A.K. Whitfield (Chief Scientist, South African Institute for Aquatic Biodiversity (SAIAB), Rhodes University, South Africa) kindly answered a few questions I had. Rita Engelbrecht kindly read and commented on earlier drafts.

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